

# (12) UK Patent Application (19) GB (11) 2 178 701 A

(43) Application published 18 Feb 1987

(21) Application No 8519739

(22) Date of filing 6 Aug 1985

(71) Applicant

Peter G Reeves & Company Limited

(Incorporated in United Kingdom)

Haden Works, Haden Street, Balsall Heath, Birmingham  
B12 9HN, West Midlands

(72) Inventor

Peter G Reeves

(74) Agent and/or Address for Service

Forrester Ketley & Co,  
Rutland House, 148 Edmund Street, Birmingham B3 2LD

(51) INT CL<sup>4</sup>

B60P 3/42 B62D 33/00

(52) Domestic classification (Edition I):

B7B 349 HH

(56) Documents cited

GB A 2129745

GB 1327821

EP A2 0146141

GB 1563399

GB 1133836

EP A1 0004612

(58) Field of search

B7B

Selected US specifications from IPC sub-classes B62D  
B60P

## (54) Dismountable vehicle body

(57) A vehicle (10) comprises a chassis (11), on which ground wheels (12) are mounted, a plurality of connectors (35a-35d), each of which extends upwardly from the chassis (11), a vehicle body (18) including a floor (19) supported on its underside by a plurality of bearers (25a-25j) each of which extend generally across the entire body width, receiving means (21a, 21b) carried by at least some of the bearers (25a-25j), the receiving means (21a, 21b) receiving the connectors (35a-35d) as the body (18) is lowered onto the chassis (11), fasteners eg bolts engageable with the connectors (35a-35d) and the receiving means (21a, 21b) to secure the chassis (11) and body together.

Thus by releasing the fasteners the body (18) may be removed from the chassis (11) to facilitate maintenance separately of the body (18) and/or the chassis (11), or to enable the body (18) to be replaced with another body (18) to facilitate handling a different load.

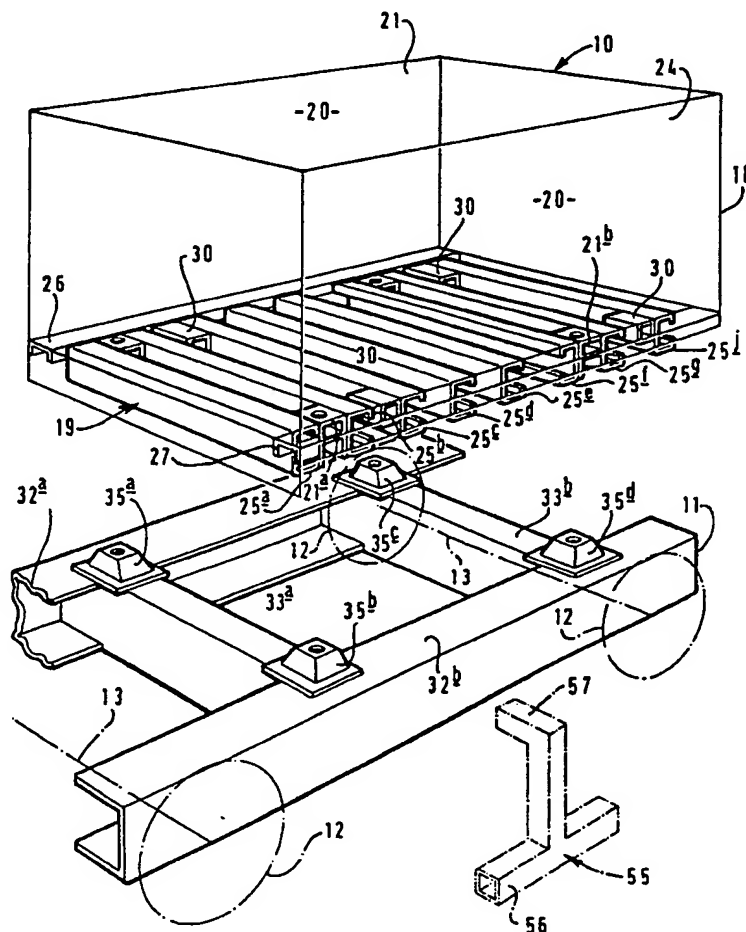
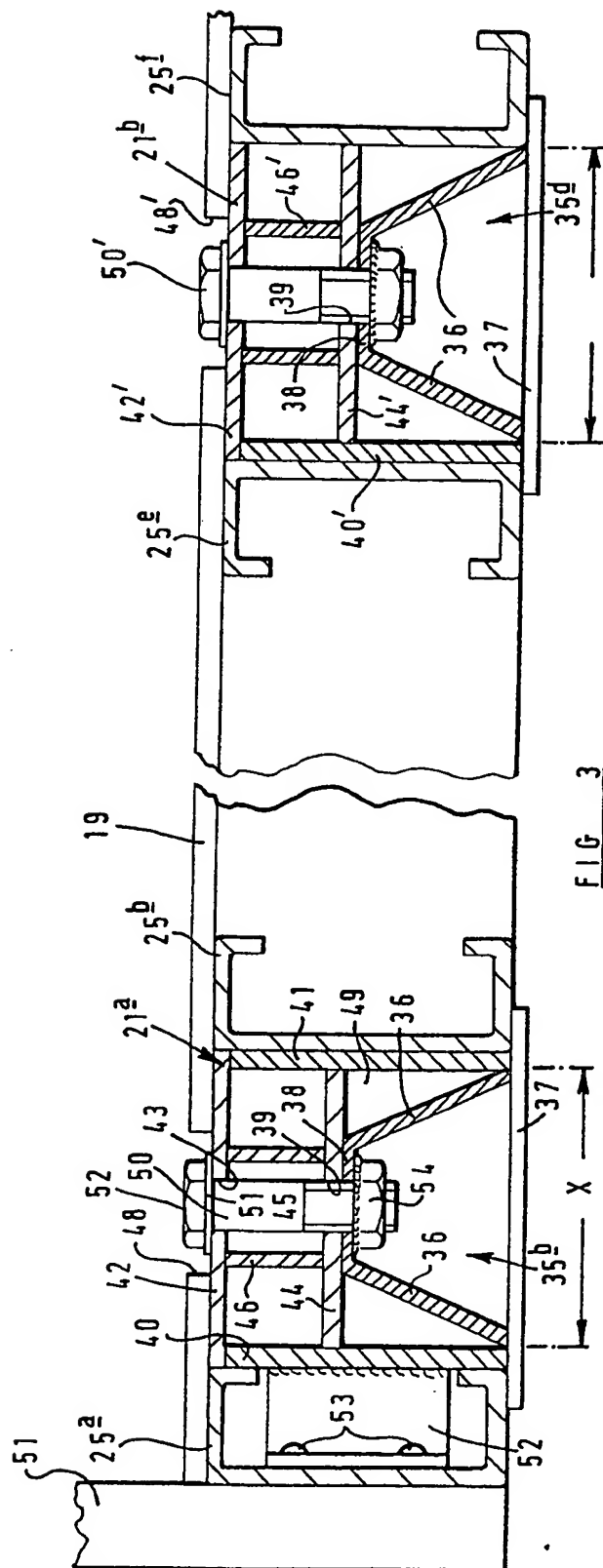
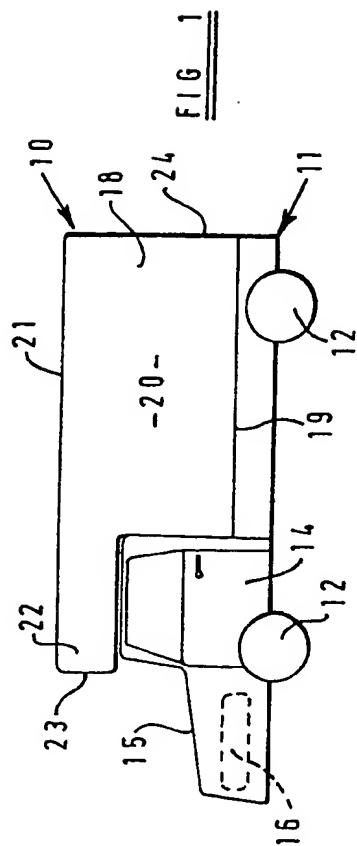
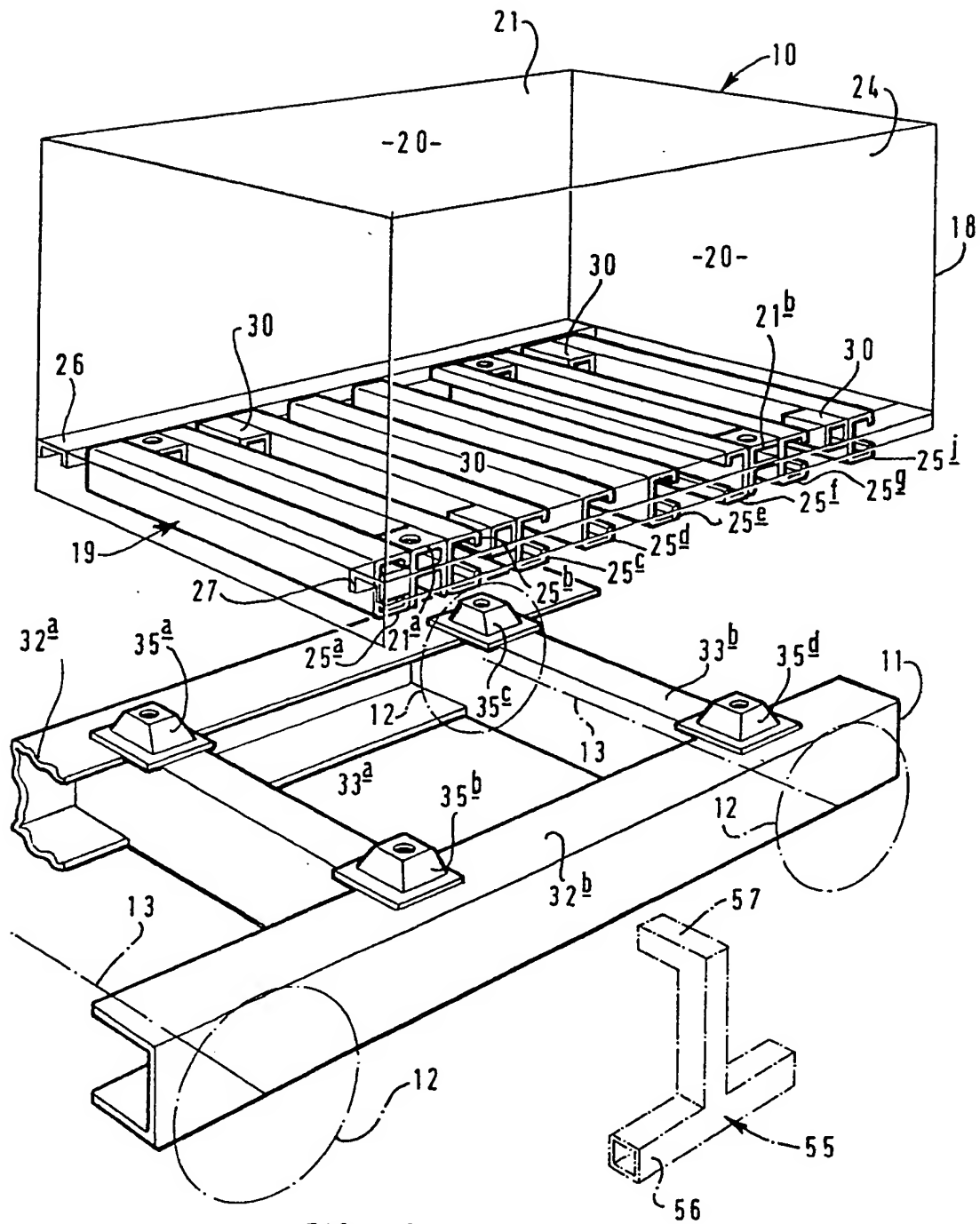


FIG 2

GB 2 178 701 A





## SPECIFICATION

### Dismountable vehicle body

#### 5 *Description of Invention*

This invention relates to a dismountable vehicle body. More particularly, but not exclusively, the invention relates to a dismountable vehicle body for a vehicle of the type comprising a rigid chassis on which ground wheels are mounted, within a motor and a driver's cab.

Previously, in the event that the chassis or the bodywork require maintenance, for example the bodywork requires painting or the engine requires servicing, it has been necessary to withdraw the vehicle entirely from operation. This is obviously inconvenient.

Furthermore, it is desirable to be able to use different body configurations with the same chassis for the more efficient handling of different loads.

Accordingly, it is an object of the invention to provide a vehicle with a dismountable vehicle body.

According to one aspect of the invention we provide a vehicle comprising a chassis, ground wheels mounted on the chassis, a plurality of connectors, each of which extends upwardly from the chassis, a vehicle body including a floor supported on its underside by a plurality of bearers each of which extend generally across the entire body width, receiving means carried by at least some of the bearers, the receiving means receiving the connectors as the body is lowered onto the chassis, fasteners engageable with the connectors and the receiving means to secure the chassis and body together.

Thus by releasing the fasteners, the body may be removed from the chassis to enable either the body or the chassis to facilitate maintenance separately on the body and/or the chassis, or the body may be replaced with another body to facilitate handling a different load.

Preferably, the chassis is rigid and carries an engine and a driver's cab, although if desired, the chassis may comprise a trailer chassis to which is articulated a separate driver's cab and engine.

Conveniently, four connectors are provided on the chassis at each corner of a rectangle, although more or less than four connectors may be provided and in different relative positions. A corresponding number of receiving means may be provided on the underside of the bodywork at positions corresponding to the positions of the connectors on the chassis.

The connectors may each comprise a truncated pyramid configuration so that as the body is lowered onto the chassis any misalignment is corrected as the sloping side surfaces of the pyramids engage the receiving

means. Preferably, the pyramids have four sides.

The receiving means may comprise sockets defining an opening in which the corresponding connector is received. Preferably the dimensions of the connector and the corresponding receiving means are such that movement of the receiving socket relative to the connector is prevented, when the body is lowered onto the chassis.

The receiving means may comprise sockets having sides defining an opening in which the corresponding connector is received. Sockets may be secured for example by welding, between a pair of respective bearers. One side of the socket may be provided by one of the bearers of the pair, or the sockets may comprise side plates which lie adjacent the bearers and provide the sides of the sockets.

The receiving sockets may have an internal plate extending between the bearers with which a top of the corresponding connector in use, engages, and the plate and the connector may have openings which in use are aligned to receive the fastener. The floor of the body may be cut away adjacent the receiving means to give access to the fasteners on top of the floor, which cut-away part may be concealed by a suitable cover when the fasteners have been secured.

The bearers may be of generally C-section.

At least some of the bearers may also carry sockets for engagement with legs to facilitate removing the body from the chassis, and to enable the body to be supported at a level above the ground.

Preferably, the body is a box-like structure having side walls, and a top. The front of the body may be closed by a bulk head of the vehicle, or preferably a separate bulk head of the body, and the body may have at least one opening closeable by a door or a shutter to enable loading and unloading of goods within the body.

The invention will now be described with the aid of the accompanying drawings in which:

*Figure 1* is a side diagrammatic view of a vehicle in accordance with the invention.

*Figure 2* is an exploded perspective view of part of the vehicle of Fig. 1 with various parts removed for clarity.

*Figure 3* is an enlarged side sectional view of part of the vehicle of Figs. 1 and 2.

A vehicle comprises a van 10 having a rigid chassis 11 on which are carried ground wheels 12 on a pair of axles 13. Also mounted on the chassis 11 not shown in Fig. 2, is a cab 14 for a driver, a bonnet 15 under which an engine 16 is mounted. The engine 16 provides power via a conventional transmission to the ground wheels 12.

The chassis 11 removably carries a body 18 in which goods may be transported. In the present example, the body 18 comprises a

box structure having a floor 19, side walls 20, and a roof 21, with part of the body providing an extension 22 over the cab 14, the front being closed by a front panel 23.

- 5 A rear door 24, such as a shutter, is provided to close the back of the body.

The body 18 further comprises a plurality of floor bearers 25a-25j all of which are of C section and extend across substantially the entire width of the body.

10 It can be seen that bearers 25f, 25g, are arranged back to back, whilst all the remaining bearers 25a to 25e and 25j open towards the rear of the van 10. Along the lower edges of the side walls 20 are longitudinally extending beams 26, 27, again of C shape but opening downwardly.

Welded to the bearers 25c and 25j adjacent each of their ends, are sockets 30 of generally square section, the purpose of which will become apparent hereinafter.

Further, welded between the pair of bearers 25a, 25b, again adjacent their ends, are receiving means comprising sockets 21a, again the purpose of which will become apparent hereinafter, and welded between the pair of bearers 25f, 25g adjacent their ends, are further receiving sockets 21b.

The chassis comprises a pair of longitudinally extending members 32a and 32b again of C section but of thicker gauge than the bearers 25a-25j, the members 32a-32b opening inwards towards one another. The axles 13 are carried beneath the chassis members 32a, 32b via conventional leaf springs and/or other suspension means (not shown). Extending across the chassis are a pair of cross members 33a, 33b of box section.

Welded on the chassis members 32a, 32b and cross members 33a, 33b are connectors 35a-35d which extend upwardly from the chassis 11. The pairs of connectors 35a, 35b and 35c, 35d are spaced apart across the chassis the same distance as the receiving sockets 21 of the bodywork 18.

Further, the connectors 35a, 35c and 35b, 35d are spaced apart longitudinally of the chassis the same distance as the receiving sockets 30.

Thus when the bodywork 18 is lowered onto the chassis, the receiving sockets 30 and connectors 35a-35d will be aligned and may thus engage.

Referring now particularly to Fig. 3, the configuration of connectors 35b, 35d are shown although of course the configuration of each of the connectors 35b-35d are identical.

The connectors 35a-35d are each of four sided, tapering truncated pyramid shape made from sheet metal and having four identical inclined side walls 36 which extend from a base comprising a periphery 37, up to a top 38 in which an aperture 39 is provided.

The maximum width of the upstanding part of the connectors comprises the distance be-

tween the side walls 36 which is indicated in Fig. 3 as X.

The receiving socket 21a welded between the bearers 25b and 25c comprises a pair of side plates 40, 41, with an upper connecting plate 42 with an aperture 43 and a lower plate 44 again with an aperture 45, which is aligned with aperture 43.

The plate 44 is substantially the same distance above the bottom of the side plates 40 and 41 as the connector 35b extends upwardly from the base 37.

Between the two plates 42 and 44, a collar 46 comprising a length of tube just larger than the apertures 43, 45, in the plates 42, 44, is welded.

It can be seen that a part of the floor 19 of the body 18 is cut-away around the aperture 43 in the receiving socket 21 as indicated at 48.

The distance between the plates 40 and 41, which is the same as the width of the plate 44 is just larger than dimension X so that the connector 35b can be received within an opening 49 provided beneath plate 44 between the plates 40 and 41. When the connector 35b is thus received, lateral movement of the receiving socket 21a relative to the connector 35b will thus be inhibited by the abutment of the lower ends of the plates 40, 41 with the side walls 36 of the connector 35b.

It can be seen from Fig. 2, that a fastener 50 comprising a bolt is received within the apertures 43 and 45 which are aligned with the aperture 39 in the top 38 of the connector 35b.

A washer 51 is interposed between the head 52 of the bolt 50 and the top plate 42 to aid seating, and a captive nut 54 is received on the threaded end of the bolt 50 which projects beneath the connector 35a.

The nut 54 is welded but may be otherwise held captive relative to the underside of the top 38 of the connector 35b.

The bolt 50 can be tightened due to the cut-away part 48 in the floor 19, from inside the bodywork 18 to effect a releasable connection between the body 18 and the chassis 11 on which the connector 35b is provided.

Because bearer 25a is adjusted a bulkhead 51 which closes the front of the body 18 behind cab 14, the bearer 25a has to open away from the bulkhead 51 to enable a connection to be made between the bulkhead 51 and the bearer. Thus an insert 52 is welded to the plate 40 of the receiving socket 21a, the insert 52 being secured, for example with rivets 53, through the bearer 25a to the bulkhead 51. This gives added rigidity.

Because bearers 25e, 25f can be arranged back-to-back, there is no need for such an insert to be included in receiving sockets 21b. Receiving socket 21b comprises one side plate 40' only, which is welded to bearer 25e

but like receiving sockets 21a has a top plate 42' and a further lower plate 44' and a spacer tube 46' between top plate 42' and plate 44', the plates 42' and 44' having openings to receive a port 50'.

Only one side plate 40' is provided, because the distance between the bearers 25e, 25f is less than the distance between the bearers 25a, 25b. Thus the dimension between the plate 40' and the bearer 25f is again X to accommodate the connector 35d which is identical to connector 35b. Of course, if desired, a further side plate like plate 41 may be provided adjacent bearer 25f if necessary.

Again, access to the bolt 50' is obtained through a cut-away part 40' in the floor 19.

It will be appreciated that when all four of the connectors 35a-35d are received within their respective receiving sockets 21a, 21b and the respective fasteners 50, 50' tightened, that a rigid, yet removable, connection between the bodywork 18 and the chassis 11, will be effected.

If it is desired to remove the bodywork 18 from the chassis 11, the following procedure is adopted.

First, each of the bolts 50, 50' for each of the connectors 35a-35d and the respective receiving sockets 21a, 21b, are released and the bolts 50, 50' removed. Four legs are provided, one of which is shown at 55 in Fig. 2, comprising a base 56 and a projecting part 57, the projecting part 57 being of generally square cross section just smaller than the openings the sockets 30 welded to the bearers 25c and 25j.

The legs 55 are sufficiently long so that with the projecting parts 57 received in the socket 30, the bodywork will be clear of the chassis and the bearers 25a-25j will be above the tops 38 of the connectors 35a-35d.

The bodywork 18 is lifted at each corner in turn, by a conventional jack placed beneath one of the bearers 26, 27 to permit the projecting part 57 of the legs 55 to be inserted into the sockets 30, and when all four legs 55 are inserted in each of the sockets 30, the vehicle may be driven away from beneath the bodywork 18 which will remain standing on the legs.

Thus an alternative bodywork 18 of the same or different configuration but having receiving sockets 21a-21b as described, can be placed on the chassis 11 if required, for example, to facilitate maintenance of the bodywork 18 without having to withdraw the entire vehicle 10 from service.

Various modifications may be made without departing from the scope of the invention.

Particularly, although four connectors 35a-35d have been described, one at approximately each corner of a rectangle, any other number of connectors may be provided in different positions, provide they extend upwardly from the chassis 11 for receipt in a respective re-

ceiving socket or other receiving means mounted on the underside of the bodywork.

As described, the connectors have each been of truncated pyramid shape, although could be of alternative configurations if required for example frusto-conical, provided that the receiving sockets are of corresponding formation to enable a releasable connection, for example by means of a fastener, between the two. The pyramid shape described is preferred because if the bodywork is slightly out of alignment with the chassis 11 when lowered, the sloping side walls 36 of the connectors 35a-35d will tend to self-centre the body 18 as the walls 36 engage the peripheries of the respective receiving sockets 21a, 21b.

Although the receiving sockets have been described as comprising side plates 40 and 41, welded to a top plate 42 and bottom plate 44, any other configuration of receiving socket could alternatively be provided.

The features described in the foregoing description, in the following claims, or the accompanying drawings, expressed in their specific forms or in terms of a means for performing the disclosed function, or a method or process for attaining the disclosed result, or a class or group of substances or compositions, as appropriate, may, separately or in any combination of such features, be utilised for realising the invention in diverse forms thereof.

#### CLAIMS

1. A vehicle comprising a chassis, ground wheels mounted on the chassis, a plurality of connectors, each of which extends upwardly from the chassis, a vehicle body including a floor supported on its underside by a plurality of bearers each of which extend generally across the entire body width, receiving means carried by at least some of the bearers, the receiving means receiving the connectors as the body is lowered onto the chassis, fasteners engageable with the connectors and the receiving means to secure the chassis and body together.

2. A vehicle according to claim 1 wherein the chassis is rigid and carries an engine and a driver's cab.

3. A vehicle according to claim 1 wherein the chassis comprises a trailer chassis to which is articulated a separate driver's cab and engine.

4. A vehicle according to any one of claims 1 to 3 wherein four connectors are provided on the chassis at each corner of a rectangle, a corresponding number of receiving means being provided on the underside of the bodywork at positions corresponding to the positions of the connectors on the chassis.

5. A vehicle according to any one of the preceding claims wherein the connectors each comprise a truncated pyramid configuration, having sloping side surface which engage the receiving means as the body is lowered onto

the chassis.

6. A vehicle according to claim 5 wherein the pyramids have four sides.

7. A vehicle according to any one of the preceding claims wherein the receiving means each comprise a socket defining an opening in which the corresponding connector is received.

8. A vehicle according to claim 7 wherein the sockets are secured between a pair of respective bearers.

9. A vehicle according to claim 8 wherein one side of the socket is provided by one of the bearers of the pair.

10. A vehicle according to claim 8 wherein the sockets comprise side plates which lie adjacent the bearers and provide the sides of the sockets.

11. A vehicle according to any one of claims 7 to 10 wherein the receiving sockets each have an internal plate extending between the bearers with which a top of the corresponding connector in use, engages.

12. A vehicle according to claim 11 wherein the plate and the corresponding connector has openings which, in use, are aligned to receive the fastener.

13. A vehicle according to claim 12 wherein the floor of the body is cut away adjacent the receiving means to give access to the fasteners on top of the floor.

14. A vehicle according to claim 13 wherein the cut-away part is concealed by a suitable cover when the fasteners have been secured.

15. A vehicle according to any one of the preceding claims wherein the dimensions of the connector and the corresponding receiving means are such that movement of the receiving socket relative to the connector is prevented, when the body is lowered onto the chassis.

16. A vehicle according to any one of the preceding claims wherein the bearers are of generally C-section.

17. A vehicle according to any one of the preceding claims wherein at least some of the bearers carry sockets for engagement with legs.

18. A vehicle according to any one of the preceding claims wherein the body is a box-like structure having side walls, and a top.

19. A vehicle according to claim 18 wherein the front of the body is closed by a bulk head of the vehicle, or a separate bulk head of the body, and the body has at least one opening closeable by a door or shutter.

20. A vehicle substantially as hereinbefore described with reference to and as shown in the accompanying drawings.

21. Any novel feature or novel combination of features disclosed herein and/or shown in the accompanying drawings.

Printed for Her Majesty's Stationery Office  
by Burgess & Son (Abingdon) Ltd, Dd 8817356, 1987.  
Published at The Patent Office, 25 Southampton Buildings,  
London, WC2A 1AY, from which copies may be obtained.